

# INDEX TO VOLUME 7

## Authors

<b>A</b>	<b>F</b>	<b>L</b>					
Altpeter, R. J. ....	478	Fan, Liang-Tseng ....	606	Lapple, C. E. ....	203		
Amundson, Neal ....	124, 376	Feehs, R. H. ....	3	Larkin, B. K. ....	530		
Anderson, Ralph ....	96	Feinman, Jerome ....	584	Larkins, R. P. ....	231		
Aris, Rutherford ....	124, 376	Friedland, Aaron J. ....	107	Leacock, James A. ....	196		
<b>B</b>							
Bain, Jesse L. ....	363	Friedlander, S. K. ....	347, 68	Lee, Jon ....	392, 3D		
Baldeschwieler, John D. ....	34	<b>G</b>			Leland, Thomas W., Jr. ....	267, 535	
Baldwin, D. E., Jr. ....	352	Garner, F. H. ....	148	Lemlich, Robert ....	102, 240		
Baldwin, Lionel V. ....	53	Gauvin, W. H. ....	254, 406, 615	Levy, Martin R. ....	240		
Banchero, J. T. ....	394	Geankoplis, C. J. ....	456	Lightfoot, E. N. ....	273		
Bankoff, S. G. ....	485	George, H. H. ....	635	Lilleleht, Lembit U. ....	548		
Barnett, L. G. ....	211	Gerhard, E. R. ....	463	Linford, H. B. ....	133		
Barnhart, Edwin L. ....	631	Gilkeson, M. M. ....	211	Löf, G. O. G. ....	641		
Beckmann, R. B. ....	319	Gill, William N. ....	61, 216	Lohrenz, John ....	68		
Beek, John ....	337	Gopalarathnam, C. D. ....	249	<b>M</b>			
Benedict, Manson ....	152	Green, Leon ....	329	Madden, A. J. ....	160		
Bennett, C. O. ....	48	Gretzinger, James ....	312	Maimoni, Arturo ....	371		
Betta, Vittorio ....	502	Grotz, L. C. ....	663	Marshall, W. R., Jr. ....	312		
Beyaert, Bruce O. ....	46	Grove, C. S., Jr. ....	216	Martin, Joseph J. ....	593, 693		
Bird, R. B. ....	41	<b>H</b>			Maslan, Frank ....	172	
Blocher, John M., Jr. ....	498	Halfen, F. J. ....	160	Mason, David M. ....	277		
Bloemer, J. W. ....	641	Hanks, R. W. ....	519	Massimilla, Leopoldo ....	502		
Bonilla, Charles F. ....	107	Hanna, O. T. ....	437, 532, 3D	McAtee, P. J. ....	456		
Boozer, G. D. ....	87	Hanraty, T. J. ....	112, 488, 548	McKetta, John J. ....	173, 336, 418, 707		
Bradshaw, R. D. ....	48	Hasseltine, E. H. ....	226	Mesler, Russell B. ....	620		
Braun, Philip H. ....	64	Henley, Ernest J. ....	295	Meter, D. M. ....	41		
Brenner, Howard ....	666	Henry, J. P. ....	10	Metzner, A. B. ....	3		
Bresan, V. P. ....	543	Hershman, Arnold ....	488	Miley, George H. ....	593		
Brewer, Jerome ....	13	Hoelscher, H. E. ....	249, 509	Mingle, J. O. ....	243		
Brian, P. L. T. ....	226, 367	Hoffman, J. M. ....	148	Misic, Dragoslav ....	264		
Brodkey, Robert S. ....	392, 531, 3D	Holm, L. W. ....	179	Moore, Franklin D. ....	620		
Bukacek, R. F. ....	453	Holm, Robert A. ....	346	Mrazek, Robert V. ....	190		
Busch, Joseph S. ....	343	Hughmark, G. A. ....	677	Mueller, William H. ....	267, 535		
Byrne, Robert ....	185	Hulbert, Hugh M. ....	143	Muendel, C. H. ....	133		
<b>C</b>			<b>N</b>				
Cairns, E. J. ....	551	Hurley, J. F. ....	226	Nelson, P. A. ....	80		
Canjar, Lawrence N. ....	343	Hutchinson, C. A., Jr. ....	64	Niedrach, L. W. ....	551		
Carberry, J. J. ....	350	Hwu, Chung-Kong ....	102	Nissan, Alfred H. ....	543, 635		
Ceaglske, N. H. ....	653	<b>O</b>			<b>P</b>		
Chandler, Horace W. ....	295	Iinoya, Koichi ....	478	Kafesjian, Ralph ....	254		
Chao, K. C. ....	598	Irving, J. P. ....	91	Peck, R. E. ....	453		
Chase, R. C. ....	392, 3D	Isbin, H. S. ....	174	Penney, W. H. ....	51		
Cheng, S. I. ....	282	<b>J</b>			Phillips, Edward M. ....	413	
Chennakesavan, Balapa ....	10	Jackson, T. W. ....	38	Piret, Edgar L. ....	138, 199, 5J, 6S		
Chinn, John S. ....	448	Jeffrey, D. W. ....	231	Plank, C. A. ....	463		
Christiansen, Ernest B. ....	519	Jones, A. M. ....	20	Powell, J. R. ....	329		
Churchill, Stuart W. ....	196, 588	<b>K</b>			Powers, J. E. ....	303, 650	
Colven, T. J. ....	72	Kafesjian, Ralph ....	463	Prausnitz, J. M. ....	96, 399, 682		
Corcoran, W. H. ....	658	Kang, T. L. ....	418	Pressburg, B. S. ....	677		
Coste, Joseph ....	124	Kapner, R. S. ....	509	Purdy, K. R. ....	38		
Cox, R. W. ....	456	Keeler, R. N. ....	399	Purves, Edward ....	531		
<b>D</b>			<b>Q</b>				
Davis, A. T. ....	72	Kennedy, John T. ....	625	Quinn, J. A. ....	260		
Della Rocca, Carlo ....	502	Kenny, William J. ....	199	<b>R</b>			
Dodds, W. S. ....	3D	Klinkenberg, Adriaan ....	176	Ramos, Hector Lopez ....	3		
Donadieu, Lucien ....	152	Knudsen, J. G. ....	20	Rawson, Norman E. ....	448		
Douglas, D. L. ....	551	Kobayashi, Riki ....	267, 535	Rey, George ....	299		
Drexler, Thomas D. ....	584	Kohn, James P. ....	514	<b>S</b>			
Dukler, A. E. ....	708	Krieve, Walter F. ....	277	<b>T</b>			
<b>E</b>			<b>U</b>				
Eckenfelder, W. Wesley, Jr. ....	631	Kudchaker, A. P. ....	707	<b>V</b>			
Eckert, E. R. G. ....	473	Kung, E. Y. ....	319	<b>W</b>			
Efferding, L. E. ....	3D	Kunii, Daizo ....	29	<b>X</b>			
Eibling, J. A. ....	641	Kurata, Fred ....	13, 68	<b>Y</b>			
Elgin, J. C. ....	46, 260	<b>L</b>			<b>Z</b>		
Elzinga, E. R., Jr. ....	394	Laddha, G. S. ....	249	<b>AA</b>			
Engle, D. L. ....	663	Landsbaum, E. M. ....	3D	<b>BB</b>			
Evnochides, Spyros ....	78	Lapidus, Leon ....	46, 163, 260, 288	<b>CC</b>			

Riccetti, Richard E.	442	Shapiro, Saul	288	Towell, G. D.	693
Rinker, R. G.	658	Sinclair, C. G.	709	Trambouze, M. T.	138, 68
Roberts, L. R.	173	Smith, J. M.	10, 29, 91, 243	Trambouze, Pierre	138, 51, 68
Robinson, Donald B.	482	Snell, L. Eric	482	Turlington, B. Lynn	336
Rodewald, Newell	13	Sollami, B. J.	3D	Tuthill, J. D.	3
Rodriguez, Ferdinand	663	Somerton, W. H.	87		V
Rosen, Edward M.	112	Soo, S. L.	384	Van Ness, H. C.	190
Rothfus, R. R.	352	Southworth, R. W.	705	Van Winkle, Matthew	363
Roundsley, R. R.	308	Sparrow, E. M.	473	Vanek, Richard P.	216
Rudd, Dale F.	376	Spurlock, J. M.	38	Vasan, C. D. Srinivasi	143
		Stevens, William F.	80, 448, 3D	Veigel, Neil D.	498
S		Steinberg, Meyer	329	Venezian, Emilio	688
Sage, B. H.	688	Stiel, Leonard I.	611	Vichare, G. G.	650
Sakaida, R. R.	658	Stillman, R. E.	288		W
Sakiadis, B. C.	26, 221, 467	Strenge, P. H.	578	Walsh, Thomas J.	53
Sarpkaya, Turgut	324	Stutzman, L. F.	3D	Wang, Y. L.	658
Schechter, Robert S.	445	Su, Yung Sung	174	Weaver, R. E. C.	211
Schiesser, W. E.	163	Swift, G. W.	68	Weisman, Joel	3D
Scher, Marvin	61			Wen, Chin-Yung	606
Scriven, L. E.	524	T		Westerheide, D. E.	357
Seader, J. D.	598	Tate, R. W.	574	Westwater, J. W.	357, 578
Sebulsky, R. T.	558	Tayyabkhan, M. T.	672	White, R. R.	231, 672
Secor, R. M.	705	Teller, A. J.	129, 282	Willis, G. B.	273
Secrest, Arthur C.	498	Thodos, George	78, 185, 264, 413, 442,		
Selke, W. A.	133		611, 625		
Sesonske, Alexander	352	Thomas, D. G.	203, 423, 431, 68		
Shain, Stephen A.	17	Tien, Chi	410		
Shair, F. H.	682	Toor, H. L.	558		
Shapiro, Eugene	288	Torobin, L. B.	406, 615		
				Z	
				Zartman, W. N.	588

## **Subject Index**

Corresponding states principle, application of to mixtures of low molecular weight gases at low temperatures and high pressures	535	Effect of Vapor-Flow Gradient on Distillation Plate Efficiency, The	346	Filters, fibrous, deposition of aerosol particles in	203
Crushing, slow compression, of single particles of glass	199	Effect of Vibration on Natural Convective Mass Transfer	240	Filtration, three-dimensional, on a circular leaf	666
Cyclohexane, solubility of in water	707	Effects of Superheated Vapor and Noncondensable Gases on Laminar Film Condensation	473	Finite-Difference Method of High-Order Accuracy for the Solution of Three-Dimensional Transient Heat Conduction Problems, A	367
Cylinder drying, heat and mass transfer transients in	635	Effective Thermal Conductivity in Packed Beds	249	Finite-Difference Transforms for Application to Stage by Stage Processes	526
Cylinders, swirling flow in	543	Effectiveness factor, catalytic, under nonisothermal conditions	350	Fission fragment energy, the utilization of, for the fixation of nitrogen	329
<b>D</b>		Effectiveness Factors for Porous Catalysts	243	Fixed-bed processes, the ration of fluids to solid temperature and/or concentration in	176
Decomposition, catalytic, of nitric oxide	658	Effectiveness of Mixing Tanks in Smoothing Cyclic Fluctuations	709	Flow of Non-Newtonian Fluids in a Magnetic Field	324
Dehydration of cyclohexane to benzene, effect of mass transfer on solid-catalyzed reactions	211	Eigenfunctions, high-order, of the Graetz problem	530	Flow, steady, of a non-Newtonian fluid in cylinder ducts	445
Densities, saturated liquid, for binary hydrocarbon systems	413	Electrolysis, isothermal growth of hydrogen bubbles during	357	the laminar nonisothermal, of non-Newtonian fluids	519
Deposition of Aerosol Particles in Fibrous Filters	203	Energy Balances in Solar Distillers	641	turbulent Newtonian, in annuli	41
Design of Experiments on the Kinetics of the Water-Gas Shift Reaction	143	Enthalpy, -pressure diagram of tertiary butyl alcohol	172	two-phase, use of the mechanical energy balance for	174
Diffusion and Equilibrium Studies for the System Acrylonitrile-Styrene-Polyethylene	295	Entrainment, a study of, perforated plate column—air-water system behavior, free, in sieve trays	363	Fluid flow and mass transfer in trickle beds, further studies of	163
Diffusion, multicomponent, a note on	17	Entrainment from a Submerged Combustion Evaporator	282	Fluid—Particle Mass Transfer in a Packed Bed	48
Diffusion Rates in Porous Catalysts	10	Entrance shape, effect of, on flow between parallel plates	299	Fluidized bed at steady state, kinetics of reduction of ferrous oxide with hydrogen in a	584
Diffusion, turbulent, in the core of fully developed pipe flow	53	Equation for the Liquid and Vapor States of Nitrogen, An	352	Fluidized bed, kinetics of carbon deposition in a	498
Diffusivity of Water in Organic Solvents, The	175	Equilibria, phase, application of the Kihara potential to high pressure of the propane-hydrogen sulfide system from the cricondontherm to the solid-liquid-vapor region vapor-liquid, in the hydrogen-nitrogen and deuterium-nitrogen systems	453	Fluidized beds, mass transfer in the flow of gases through solid-gas, a study of streams of solids flowing from	8M
Dispersed-Phase Holdup in a Rotating Disk Extraction Column	319	a general correlation of in hydrocarbon mixtures	399	Fluidized systems, moving vertical, the mechanics of; V. concurrent cogravity flow	442
Distillation, fractional, dynamics of	653	Equilibrium, and diffusion, studies for the system acrylonitrile-styrene-polyethylene	13	Force Convection Heat Transfer to Water Flowing Normal to a Cylinder	502
Distillation plate efficiency, the effect of vapor-flow gradient on	346	vapor-liquid, in ammonia complex systems	20	Fractional distillation, dynamics of Free Entrainment Behavior in Sieve Trays	260
Distribution of Nitric Acid Between Water and Tributyl Phosphate-Hexane Solvents, The	152	in the n-butane-nitrogen system.	615	Fuel cells, performance of fractional watt ion exchange membrane	531
Drag Coefficients at Low Reynolds Numbers for Flow Past Immersed Bodies	152	Ethane, ethylene, and acetylene, thermal decomposition of: kinetic data from nonisothermal experiments	448	Further Studies of Fluid Flow and Mass Transfer in Trickle Beds	653
Drag Coefficients of Single Spheres Moving in Steady and Accelerated Motion in a Turbulent Fluid, The	20	Evaporating plane interface, Taylor instability of an	173	G	282
Drop evaporation, binary-, computer calculation of	574	spheres at low pressures, temperature depressions for	295	Gas Dynamic Processes Involving Suspended Solids	551
Droplets from centrifugal spray nozzles, size distribution of	80	Evaporation, binary-drop, computer calculation of	394	Gas flames, acoustically resonating, heat transfer from in a cylindrical burner	384
Drop spray, immersion sampling of	574	Evaporator, entrainment from a submerged combustion	653	liquid flow, holdup and pressure drop within a vertical pipe	588
Drops in liquid-liquid systems, some observations on the mechanics of	394	Extraction column, dispersed-phase holdup in a rotating disk	102	solubilities, a thermodynamic correlation of	677
Dynamics of Fractional Distillation	653	Extraction of Mixed Solutes: I. Separation of Formic and Hydrochloric Acids. II. Separation of Acetic and Sulfuric Acids	352	General Correlation of Vapor-Liquid Equilibria in Hydrocarbon Mixtures, A	682
<b>E</b>		Extractive distillation of hydrocarbons, thermodynamics of solvent selectivity in	211	Generalized Velocity Distribution for Non-Newtonian Fluids, A	598
Effect of Acoustic Vibration on Forced Convective Heat Transfer, The	72	reaction: batch and continuous-flow chemical reaction systems dilute case	72	Glass, single particles of, slow compression crushing of	3D
Effect of Entrance Shape on Flow Between Parallel Plates	102	F	631	Glycerol and sodium chloride in resin, solid phase transport of	199
Effect of Mass Transfer on Solid-Catalyzed Reactions: the Dehydrogenation of Cyclohexane to Benzene	352	Felted cylinders, heat and mass transfer transients in cylinder drying	635	Graetz problem, high-order eigenfunctions of the	672
Effect of Mixer Design on the Efficiency of a Pump-Mix Mixer-Settler, The	211	Ferroxide, kinetics of reduction of with hydrogen in a fluidized bed at steady state	650	584	530
Effect of Organic Substances on the Transfer of Oxygen from Air Bubbles in Water, The	72				
Effect of Rate of Sampling on the Transient Behavior of Thermo-gravitational Thermal Diffusion Columns Without Reservoirs	631				
The	650				

## H

- Heat and Mass Transfer Transients in Cylinder Drying: Part II.  
Felted Cylinders .....  
Heat and mass transfer, turbulent convective, from accelerating particles .....  
Heat and momentum transfer, analogy between, for the turbulent boundary layer on flat plate .....  
Heat and Momentum Transport Characteristics of Non-Newtonian Aqueous Thorium Oxide Suspensions .....  
Heat conduction problems, three-dimensional transient, a finite-difference method of high-order accuracy for the solution of .....  
Heats of Mixing: Alcohol-Aromatic Binary Systems at 25°, 35°, and 45°C. ....  
Heat transfer, and laminar boundary layer flow, past a flat plate for a liquid of variable viscosity .....  
and simultaneous mass, in the flow of gases past single spheres .....  
Heat Transfer Characteristics of Porous Rocks: II. Thermal Conductivities of Unconsolidated Particles with Flowing Fluids .....  
Heat transfer, force convection, to water flowing normal to a cylinder .....  
forced convective, the effect of acoustic vibration on .....  
free convection, velocity and temperature distributions about a horizontal cylinder in .....  
Heat Transfer From Acoustically Resonating Gas Flames in a Cylindrical Burner .....  
Heat Transfer in a Chemically Reacting System (Nitrogen Tetroxide-Dioxide) .....  
Heat Transfer in Reacting Systems: Heat Transfer to Nitrogen Dioxide Gas Under Turbulent Pipe Flow Conditions .....  
Heat transfer rates for parallel flow of liquid metals through tube bundles: II. analytical study of use of boundary-layer theory to predict the effect of, on the laminar-flow field in a vertical tube with a constant-temperature wall .....  
Heterogeneous Phase and Volumetric Behavior of the Methane *n*-Heptane System at Low Temperatures .....  
High-Order Eigenfunctions of the Graetz Problem .....  
High Temperature Pile Irradiation of the *n*-Heptane-Hydrogen System .....  
Holdup and Pressure Drop with Gas-Liquid Flow in a Vertical Pipe .....  
Holdup, dispersed-phase, in a rotating disk extraction column .....  
Hydrates in Systems Containing Methane, Ethylene, Propylene, and Water .....  
Hydrocarbon gases, the thermal conductivity of, at normal pressures mixtures, a general correlation of vapor-liquid equilibria in .....

## I

- Immersion Sampling of Spray Droplets .....  
Initiation of Roll Waves .....  
Interfacial Area in Liquid-Liquid Mixing .....  
Interfacial shear stress, relation of to the wave height for concurrent air-water flow .....  
Ion exchange membrane fuel cells, performance of fractional watt Isothermal Growth of Hydrogen Bubbles During Electrolysis .....  
Kihara potential, application of, to high pressure phase equilibria Kinetic Data from Nonisothermal Experiments: Thermal Decomposition of Ethane, Ethylene, and Acetylene .....  
Kinetics of Carbon Deposition in a Fluidized Bed .....  
Kinetics of Reduction of Ferrous Oxide with Hydrogen in a Fluidized Bed at Steady State .....  
Kinetics of the water-gas shift reaction, design of experiments on the .....  
L  
Laminar Boundary Layer Flow and Heat Transfer Past a Flat Plate For a Liquid of Variable Viscosity .....  
Laminar Nonisothermal Flow of Non-Newtonian Fluids, The Leaf, circular, three-dimensional filtration on .....  
Liquid Flow and Gas Phase Mass Transfer in Wetted-Wall Towers .....  
Liquid-liquid mixing, interfacial area in .....  
Liquid lithium, mass transfer with, in circular conduits metals, parallel flow of, through tube bundles: II. analytical study of heat transfer rates for .....  
Liquid-Vapor Equilibria in the Hydrogen-Nitrogen and Deuterium-Nitrogen Systems .....  
M  
Magnetic field, flow of non-Newtonian fluids in a .....  
Mass and heat transfer, simultaneous, in the flow of gases past single spheres transients in cylinder drying .....  
Mass transfer, and fluid flow, in trickle beds, further studies of and heat, turbulent convective, from accelerating particles .....  
Mass Transfer Between Isobutanol and Water in Concurrent Flow Through a Packed Column .....  
Mass transfer, effect of, on solid-catalyzed reactions: the dehydrogenation of cyclohexane to benzene .....  
Mass Transfer from Single Solid Spheres by Free Convection .....  
Mass transfer, gas phase, and liquid flow, in wetted-wall towers .....  
Mass Transfer in Stirred Vessels .....  
Mass Transfer in the Flow of Gases Through Fluidized Beds .....

## Mass transfer kinetics, phase and area contributions to

- multicomponent .....  
natural convective, the effect of vibration on .....  
Mass Transfer with Liquid Lithium in Circular Conduits .....  
Measurement of Rapid Surface Temperature Fluctuations During Nucleate Boiling of Water, The Mechanical energy balance for two-phase flow, use of the .....  
Mechanics of Moving Vertical Fluidized Systems, The: V. Concurrent Cogravity Flow .....  
Mechanics of Semifluidization of Single Size Particles in Solid-Liquid Systems .....  
Mechanics of Vertical Moving Liquid-Liquid Fluidized Systems, The: II. Countercurrent Flow .....  
Membrane Selectivity .....  
Methane-hydrogen system, volumetric properties of gas mixtures at low temperatures and high pressures by the Burnett method. ....  
*n*-heptane system, heterogeneous phase and volumetric behavior of, at low temperatures. ....  
Method of Measuring Thermal Diffusivities of Rocks at Elevated Temperatures, A .....  
Microscopic Study of Bubble Growth During Nucleate Boiling .....  
Miscible displacement in oil recovery, phase relations of .....  
Mixer design, the effect of, on the efficiency of a pump-mix mixer-settler .....  
Mixing, heats of, alcohol-aromatic binary systems at 25°, 35°, and 45°C. ....  
Modification of the Momentum Transport Hypothesis, A .....  
Molecular weight gases, application of the corresponding states principle to mixtures of at low temperatures and high pressures .....  
Momentum, and heat transfer, an analogy between, for the turbulent boundary layer on a flat plate .....  
transfer studies, particles, turbulent flow ballistics facility for .....  
transport hypothesis, a modification of the .....  
Multicomponent Mass Transfer: II. Experiment .....  
Multicomponent Mass Transfer: I Theory .....  
Multimolecular Adsorption Equation .....  
N  
*n*-heptane-hydrogen system, high temperature pile irradiation of .....  
Newtonian and non-Newtonian fluids, viscous, agitation of .....  
flow, turbulent, in annuli .....  
Nitric oxide, catalytic decomposition of .....  
Nitrogen, an equation for the liquid and vapor states of .....  
dioxide gas under turbulent pipe flow conditions, heat transfer to, heat transfer in reacting systems .....  
fixation of, the utilization of fission fragment energy for the .....

Non-...  
f...  
fluid...  
t...  
flow...  
the...  
Nonp...  
P...  
Note...  
A...  
Note...  
S...  
Nucle...  
c...  
of...  
s...  
d...  
On the...  
Optim...  
Optim...  
Organ...  
B...  
Oxygen...  
o...  
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Packe...  
o...  
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Polye...  
sy...  
ri...  
Pressu...  
li...  
Pressu...  
ti...  
Pressu...  
P...  
Proce...  
per...  
Propa...  
fr...  
se...  
ec...  
P.V.T...  
st...  
L...  
Vol.

Non-Newtonian fluid, on the steady flow of a, in cylinder ducts	445	Q	Study of Streams of Solids Flowing From Solid-Gas Fluidized Beds, A	502
fluids, a generalized velocity distribution for	392, 3D	Quantitative Treatment of the Forgotten Effect in Liquid Thermal Diffusion, A	478	
flow of, in a magnetic field	324		418	
the laminar nonisothermal flow of Nonpolar gases, viscosity of at normal pressures	519	R	Suspension of Slurries by Mechanical Mixers	3D
Note on Multicomponent Diffusion, A	611	Ratio of Fluids to Solid Temperature and/or Concentration in Fixed-Bed Process, The	Suspensions, flocculated, III. laminar-flow properties of	431
Note on Transport to Spheres in Stokes Flow, A	17	Reaction zone, location of in liquid-liquid systems	transport characteristics of, II. minimum transport velocity for flocculated suspensions in horizontal pipes	423
Nucleate boiling, microscopic study of bubble growth during	578	Reactor, packed bed, transient studies of product distribution from a tubular, sensitivity	Swirling Flow in Cylinders	543
of water, measurement of rapid surface temperature fluctuations during	620	Relation of Interfacial Shear Stress to the Wave Height for Concurrent Air-Water Flow	T	
O		Relationship Between Pellet Size and Performance of Catalysts	Taylor Instability of an Evaporating Plane Interface	485
On the Steady Flow of a Non-Newtonian Fluid in Cylinder Ducts Optimization, iterative, a study of	445	S	Temperature Depressions for Evaporating Spheres at Low Pressures	160
Optimization of Process Performance Organic substances, effect of on the transfer of oxygen from air bubbles in water	376	Saturated Liquid Densities for Binary Hydrocarbon Systems	Temperature fluctuations, measurement of rapid surface during nucleate boiling of water	620
Oxygen, effect of organic substances on transfer of from air bubbles in water	288	Semifluidization, mechanics of single size particles in solid-liquid systems	Temperature Gradients in Turbulent Gas Streams: Effect of Viscous Dissipation on Evaluation of Total Conductivity	688
P		Simultaneous Mass and Heat Transfer in the Flow of Gases Past Single Spheres	Thermal conductivities of unconsolidated particles with flowing fluids, heat transfer characteristics of porous rocks	29
Packed bed reactor, transient studies of product distribution from a	509	Single spheres, drag coefficients of moving in steady and accelerated motion in turbulent fluid	conductivity, effective, in packed beds	249
Packed beds, effective thermal conductivity in	249	Size Distribution of Droplets from Centrifugal Spray Nozzles	of hydrocarbon gases at normal pressures, the	264
two-phase concurrent flow in	231	Slow Compression Crushing of Single Particles of Glass	decomposition of ethane, ethylene, and acetylene: kinetic data from nonisothermal experiments	693
Packed column, mass transfer between isobutanol and water in concurrent flow through a	196	Sodium chloride and glycerol in resin, solid phase transport of	diffusion, liquid, a quantitative treatment of the forgotten effect in	34
Penetration Theory for Gas Absorption Accompanied by a Second Order Chemical Reaction	226	Solid-Liquid Phase Behavior of Binary Solutions at Elevated Pressures	diffusivities of rocks at elevated temperatures, a method of measuring	87
Performance of Fractional Watt Ion Exchange Membrane Fuel Cells	551	Solid-liquid systems, mechanics of semifluidization of single size particles in	Thermodynamic Correlation of Gas Solubilities, A	682
Phase and Area Contributions to Mass Transfer Kinetics	129	Solid Phase Transport of Glycerol and Sodium Chloride in Resin	Thermodynamic Properties of Air	3D
Phase and volumetric behavior, heterogeneous, of the methane n-heptane system at low temperatures	514	Solubility of Cyclohexane in Water	Thermodynamic Properties of Sulfur Dioxide	418
behavior, solid-liquid, of binary solutions at elevated pressures	303	Solvent flooding processes, a comparison of propane and carbon dioxide	Thermodynamics of Solvent Selectivity in Extractive Distillation of Hydrocarbons	96
Phase Equilibria of the Propane-Hydrogen Sulfide System from the Cricondontherm to the Solid-Liquid Vapor Region	13	selectivity in extractive distillation of hydrocarbons, thermodynamics of	Thermogravitational thermal diffusion columns without reservoirs, effect of rate of sampling on the transient behavior of	650
Phase Relations of Miscible Displacement in Oil Recovery	64	Solvents, organic, the diffusivity of water in	Three-Dimensional Filtration on a Circular Leaf	666
Polyethylene, -acrylonitrile-styrene system, diffusion and equilibrium studies for the	295	the distribution of nitric acid between water and tributyl phosphate-hexane	Thorium oxide suspensions, non-Newtonian aqueous, heat and momentum transport characteristics of	6S
Pressure drop and holdup with gas-liquid flow in a vertical pipe	677	Some Observations on the Mechanics of Drops in Liquid-Liquid Systems	Transport Characteristics of Suspensions: II. Minimum Transport Velocity for Flocculated Suspensions in Horizontal Pipes	423
Pressure-Enthalpy Diagram of Tertiary Butyl Alcohol	172	Spray nozzles, centrifugal, size distribution of droplets from	III. Laminar-Flow Properties of Flocculated Suspensions	431
Pressures, normal, viscosity of non-polar gases at	611	Stage by stage processes, finite-difference transforms for application to	Transient behavior of thermogravitational thermal diffusion columns without reservoirs, effect of rate of sampling on the transient behavior of	650
Process control, linear, a study on performance, optimization of	478	Steady state, kinetics of reduction of ferrous oxide with hydrogen in a fluidized bed at	Transient Studies of Product Distribution from a Packed Bed Reactor	509
Propane-hydrogen sulfide system from the cricondontherm to the solid-liquid-vapor region, phase equilibria of the	288	Stirred vessels, mass transfer in	Transport Properties of Carbon Dioxide, The	625
P.V.T.-Behavior of Diatomic Substances in Their Gaseous and Liquid States, The	13	Stokes flow, a note on transport to spheres in		
	185	Stress, shear, interfacial, relation of to the wave height for concurrent air-water flow		
		Study of Entrainment, Perforated Plate Column—Air-Water System, A		
		Study of Iterative Optimization, A		

Transport, solid phase, of glycerol and sodium chloride in resin to spheres in Stokes flow, a note on	672	U	Vibration, acoustic, the effect of, on forced convective heat transfer	102	
Tubular Reactor Sensitivity	347, 68	Use of Boundary-Layer Theory to Predict the Effect of Heat Transfer on the Laminar-Flow Field in a Vertical Tube with a Constant-Temperature Wall	112	the effect of, on natural convective mass transfer	240
Turbulent Convective Heat and Mass Transfer From Accelerating Particles	124	Use of the Mechanical Energy Balance for Two-Phase Flow	174	Viscometer, falling, an experimentally verified theoretical study of the	68
Turbulent Diffusion in the Core of Fully Developed Pipe Flow	254	Utilization of Fission Fragment Energy for the Fixation of Nitrogen, The	329	Viscosity of Nonpolar Gases at Normal Pressures, The	611
Turbulent Flow Ballistic Facility for Particle Momentum Transfer Studies	53			Viscous dissipation, effect of on evaluation of total conductivity: temperature gradients in turbulent gas streams	688
Turbulent fluid, drag coefficients of single spheres moving in steady and accelerated motion in a gas streams, temperature gradients in: effect of viscous dissipation on evaluation of total conductivity	406	V	Volumetric properties of Gas Mixtures at Low Temperatures and High Pressures by the Burnett Method: the Hydrogen-Methane System	267	
Turbulent Newtonian Flow in Annuli	615	Vapor-Liquid Equilibrium in Ammonia Complex Systems	133	W	
Two-Phase Concurrent Flow in Packed Beds	41	Vapor-Liquid Equilibrium in the <i>n</i> -Butane-Nitrogen System	173	Water-gas shift reaction, design of experiments on the kinetics of	143
	231	Velocity and Temperature Distributions About a Horizontal Cylinder in Free Convection Heat Transfer	352	Waves, roll, initiation of	488
		Velocity distribution, generalized, for non-Newtonian fluids	392, 3D	Wetted-wall towers, liquid flow and gas phase mass transfer in	463

## BOOKS

**Mechanics of Solids and Fluids**, Robert R. Long, Prentice-Hall, Inc., Englewood Cliffs, New Jersey (1961). 156 pages. Trade edition \$9.00, text edition \$6.75.

A large part of this book is concerned with stress, strain, and equations of motion in a continuous three-dimensional medium. As an introductory text it is primarily restricted to matter with linear stress-strain diagrams, such as elastic solids and Newtonian fluids. But it is not just another mechanics book. The vector and tensor notation allows the author to devote more space to concepts than to lengthy equations and at the same time describe situations of more than one or two dimensions. The qualitative discussion of plastic solids and plastic fluids is interesting. Theory is emphasized, but applications are clear.

For the chemical engineering student this book would be useful for considering force balances and one-phase motion

problems in a general notation. It would be useful for learning some applications of calculus and boundary value problems. But little is said about fluids and even less about real fluids that have viscosity and friction. The author's attitude is expressed in his discussion of the Navier-Stokes equation where he mentions that "In nearly all cases of practical importance the frictional terms are only a very small fraction of the other terms, except in limited regions." Three paragraphs are devoted to turbulent flow. The brief discussion of real fluids is well done however.

This is not a chemical engineering book, but it can provide a link between the mechanics of civil engineering and the fluid flow of chemical engineering. This would, for example, be good preparation for reading new texts such as "Transport Phenomena" by Bird, Stewart, and Lightfoot.

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**Physical Chemistry**, 2 ed., Farrington Daniels and Robert A. Alberty, John Wiley and Sons, Inc., New York (1961). 744 pages. \$8.75.

This book continues to be an outstanding one for its purposes, that is, as a text for comprehensive first course in physical chemistry. The new edition includes several topics and approaches not in the first edition and is substantially reorganized.

Much of the early work in physical chemistry was concerned with the average properties of large parcels of molecules. This deterministic approach, of which classical thermodynamics is an example, has lead to the development of many useful relationships. In recent years however more investigations have been concerned with the properties of molecules themselves; the stochastic approach, involving molecule to molecule variations, is becoming increasingly important. This emphasis on molecular properties has strongly influenced the reorganization of this edition. Classical thermodynamics has been presented first, kinetic theory follows, and then the sections on quantum theory, more

(Continued on page 4D)

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